FEMA FOREWORD

The Federal Emergency Management Agency (FEMA) is pleased to have sponsored the preparation of this publication on rapid visual screening of seismically hazardous buildings. The publication is one of a series that FEMA is sponsoring to encourage local decision makers, the design professions, and other interested groups to undertake a program of mitigating the risks that would be posed by existing hazardous buildings in case of an earthquake. Publications in this series examine both engineering and architectural aspects as well as societal impacts of such an undertaking. They are prepared under the National Earthquake Hazards Reduction Program.

FEMA's program to mitigate the hazards posed by existing buildings was started in 1984 after resources appeared adequate to ensure the completion of a set of practical materials on the seismic safety of new buildings. The first project undertaken was the preparation of a *Plan of Action* and companion *Workshop Proceedings* by a joint venture consisting of Applied Technology Council (ATC), the Building Seismic Safety Council (BSSC), and the Earthquake Engineering Research Institute (EERI). The *Plan* included 23 priority items with a cost of about $40M and is being used as a "road map" by FEMA to chart activities and interpret, regroup, and expand projects in this area.

These activities will result in a coherent, cohesive, carefully selected and planned reinforcing set of documents enjoying a broad consensus and designed for national applicability. The resultant publications (descriptive reports, handbooks, and supporting documentation) will provide guidance primarily to local elected and appointed officials and design professions on how to deal not only with engineering problems, but also with public policy issues and societal dislocations. It is a truly interdisciplinary set of documents, even more so in concept and scope than the set related to new buildings.

Completed in the spring of 1988 were:

- The first collection of costs incurred in seismic rehabilitation of existing buildings of different occupancies, construction, and other characteristics, based on a sample of about 600 projects;
- A handbook (and supporting documentation) on how to conduct a rapid, visual screening of buildings potentially hazardous in an earthquake (ATC-21 and ATC-21-1 reports); and
- A report on the state-of-the-art of heavy urban rescue and victim extrication (ATC-21-2 report).

In preparation are:

- A handbook (and supporting documentation) on consensus-backed and nationally applicable methodologies to evaluate in detail the seismic risk posed by existing buildings of different characteristics (ATC-22 and ATC-22-1 reports);
- An identification of consensus-backed and nationally applicable techniques for the seismic-strengthening of existing buildings of different characteristics and a methodology to estimate their costs, with supporting documentation; and
- A handbook on how to set priorities for the seismic retrofitting of existing buildings—a truly interdisciplinary examination of the complex public policy-societal impacts of retrofitting activities at the local level.

In competitive procurement is:

- An identification of existing and realistically achievable financial incentives in the public and private sectors derived with the assistance of a user group and disseminated in selected localities cooperating in the effort.

Additionally recommended actions are:

- Cost benefit analyses to determine the costs and benefits resulting from rehabilitating selected types of buildings with selected occupancies in a number of cities in different seismic zones. They will build on all the engineering and societal information developed or being developed by the ongoing projects relating to existing buildings. Output will provide findings and recommendations in both strictly economic terms and also in societal and public-policy-related terms.

- A set of nationally applicable and consensus-approved guidelines for the seismic rehabilitation of existing buildings based on acceptable performance and other overarching criteria for strengthening buildings, and on the information developed in the other handbooks and supporting engineering reports described earlier. Reflected in the guidelines will also be the latest research results and technical lessons learned from recent earthquakes.

- Complementary materials to encourage the use of the recommended guidelines similar to those developed for new buildings.

- Information dissemination for existing hazardous buildings, to be modeled after and grafted onto the existing BSSC project of information dissemination on new buildings.

ACKNOWLEDGMENTS

With respect to this publication, FEMA gratefully acknowledges the expertise and efforts of Dr. Charles Scawthorn, the principal author, his staff and consultants, the Project Engineering Panel, Technical Advisory Committee, and the Applied Technology Council management and staff.

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The report was prepared under Contract EMW-86-C-2359 between the Federal Emergency Management Agency and the Applied Technology Council.

For further information regarding this document, or additional copies, contact the Federal Emergency Management Agency, Earthquake Programs, 500 "C" Street, S.W., Washington, D.C. 20472